



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/089,156	03/27/2002	Hiroaki Munehira	220800U2XPCT	9787
22850 7590 01/25/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER WANG, QUAN ZHEN	
			ART UNIT	PAPER NUMBER
			2613	
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		01/25/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/089,156

Applicant(s)

MUNEHIRA ET AL.

Examiner

Quan-Zhen Wang

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfoot et al. (U.S. Patent US 6,704,511 B1).

Regarding claims 1 and 7, Kerfoot discloses a wavelength division multiplexing and optical transmission apparatus (fig. 3) comprising: a plurality of optical transmitting units (fig. 3, transmitter 150) for modulating a plurality of laser signals (fig. 3, laser signal outputted from laser 152) having inherent wavelength with a plurality of data signals (fig. 3, data information 158) and outputting a plurality of modulated optical signals (fig. 3, output from modulator 154); optical amplifying means (fig. 3, broadband noise source 138; column 3, lines 43-60) with non-input and for outputting an amplified spontaneous emission light signal; band pass filter means (fig. 3, filter 140) for band pass filtering the output of the amplifying means and outputting a non-modulated spectrum slice optical signals; and optical multiplexing means (fig. 3, MUX 132) for multiplexing the non-modulated spectrum slice optical signals as a dummy signal of an optical signal to be added in the future with the modulated optical signals and transmitting a multiplexed optical signal (column 3, line 43 to column 4, line 42), the bandpass filter means

Art Unit: 2613

includes a first and second plurality of band pass filters (fig. 5, filters 143.1-143.3 and filters 143.4-143.6). Kerfoot differs from the claimed invention in that Kerfoot does not specifically disclose a second optical amplifier connected to the bandpass filter means. However, it is well known in the art to utilize an optical amplifier to amplify optical signals. For example, Kerfoot disclose to use an optical amplifier (fig. 3, amplifier 156) to amplify a modulated optical signal. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate optical amplifiers connected to the bandpass filter means for the filters dummy signals, as it is used for the modulated signal, in order to boost the optical power of the filters dummy signals to appropriate level.

Regarding claims 3 and 9, Kerfoot further teaches that the optical amplifying means comprises optical amplifier having a signal input terminal terminated at no-reflection (column 3, lines 53-56), and the band passing filter means comprises a light dividing element (fig. 5, DEMUX 144) for dividing the amplified spontaneous emission light signal output by the optical amplifier into a plurality of amplified spontaneous emission light signals, and a plurality of optical band pass filters (fig. 5, filters 143.1 to 143.6), connected to a plurality of divided output terminals of the light dividing element respectively, for outputting the non-modulated spectrum slice optical signal.

Regarding claims 2 and 8, Kerfoot further teach that the optical amplifying means comprises optical amplifier having a signal input terminal terminated at no-reflection (column 3, lines 53-56). Kerfoot differs from the claimed invention in that Kerfoot does not specifically teach that the optical amplifier means comprises a pair of optical

Art Unit: 2613

amplifiers. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to employ more than one optical amplifier for the optical amplification means since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8.

Regarding claims 4 and 10, Kerfoot has been discussed in regard with claims 1, 3, 7, and 9 above. Kerfoot further teaches an optical multiplexer (fig. 5, MUX 146) for multiplexing two or more outputs of the optical band pass filters with each other and outputting the non-modulated spectrum slice optical signals, and controlling a power of the output to a constant value (column 3, lines 57-60). Kerfoot differs from the claimed invention in that Kerfoot does not specifically teach an optical amplifier for amplifying an output of the optical multiplexer. However, an optical amplifier is well known in the art and is widely used to amplify optical signals wherever needed. For example, Kerfoot discloses to use an optical amplifier (fig. 3, amplifier 156) to amplify the modulated signal. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an optical amplifier for amplifying an output of the non-modulated signals in order to boost the power strength of the ASE source used for dummy optical signals.

3. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfoot et al. (U.S. Patent US 6,704,511 B1) in view of Alphonsus et al. (U.S. Patent US 5,764,405).

Regarding claims 5 and 11, the prior art fig. 1, Kerfoot has been discussed above in regard with the rejection for claims 1 and 2. Kerfoot differs from the claimed invention in that Kerfoot does not specifically teach that the optical amplifying means comprises a plurality of pumping laser signal sources connected to the optical amplifier redundantly. However, it is well known in the art that redundant pumping lasers are used to provide for a virtually non-failing optical amplifier. For example, Alphonsus teaches to use redundant pump lasers (fig. 2, Pumps 50) to provide for a virtually non-failing optical amplifier (column 4, lines 21-32). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate an amplifier with redundant pump sources, as it is taught by Alphonsus, along the transmission line, in the system of Kerfoot in order to boost the ASE power strength for dummy optical signals and provide reliable transmission system.

4. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kerfoot et al. (U.S. Patent US 6,704,511 B1) in view of Mathis (U.S. Patent US 4,726,644).

Regarding claims 6 and 12, the prior art fig. 1, Kerfoot has been discussed above in regard with the rejection for claim 1. Kerfoot differs from the claimed invention in that Kerfoot does not specifically teach that the band pass filtering means comprises a plurality of optical band pass filters connected in cascade. However, it is well known in the art to cascade two or more band pass filters. For example, Mathis teaches to connect two filters in cascade (column 9, lines 44-50). Therefore, it would have been

Art Unit: 2613

obvious for one of ordinary skill in the art at the time when the invention was made to use a plurality of optical band pass filters connected in cascade, as it is taught by Mathis, in the system of Kerfoot in order to provide multiple stage of bandpass filtering with a narrower pass band.

Response to Arguments

5. Applicant's arguments filed one December 18, 2006 have been carefully considered but are not persuasive.

Applicant argues that "the Office Action dose not present a *prima facie* case of obviousness because Kerfoot fails to disclose all the features of Applicants' claimed invention". Examiner respectfully disagrees with the Applicant.

As it is admitted by the Applicant, in Kerfoot, head end 130 provides a source signal that combines information signals and filtered noise signals. Information signals come from one or more transmitters 150. At the same time, filtered noise signals come from noise source 138 through filter circuitry 140. The filter blocks optical signals at wavelengths that correspond to the wavelengths of the information signals from the transmitters 150 so noise is not added to the desired information signals. However, the filter passes optical signals (e.g., noise signals from broadband noise source 138) at wavelengths not within the stop band. By loading unused channels (called idler channels) with noise channels, the information signals on the used channels will not draw all of the power from optically pumped fiber amplifiers in repeaters 110. Instead, the noise signals carried to the idler channels will draw their proportionate share of the

Art Unit: 2613

repeaters power as if they were information signals. In this way, all WDM channels will appear to be fully loaded from their initial operation. Even some of the channels are loaded with noise. As more capacity is needed from network 100, additional transmitters 150 are added and filter circuitry 150 is modified or replaced so as to block optical signals at the wavelengths of the information signals provided by transmitters 150. Kerfoot differs from the claimed invention in that Kerfoot does not specifically disclose that the band pass filtering system for the idler channels includes a first and a second optical amplifiers. However, it is well known in the art to utilize an optical amplifier to amplify optical signals. For example, Kerfoot further disclose to use an optical amplifier (fig. 3, amplifier 156) to amplify a modulated optical signal. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to incorporate optical amplifiers connected to the bandpass filter means for the filters dummy signals, as it is used for the modulated signal in the system of Kerfoot, in order to boost the optical power of the filters dummy signals to appropriate level.

Even though Kerfoot does not disclose the specific structure of the claimed invention, it is clear that Kerfoot discloses "all the features" of the claimed invention, as it is pointed out in the above claim rejections. Armed with the teachings of Kerfoot, it would have been obvious for any one of ordinary skill in the art at the time when the invention was made to incorporate optical amplifiers connected to the bandpass filter means for the filters dummy signals, as it is used for the modulated signal in the system of Kerfoot, in order to boost the optical power of the filters dummy signals to appropriate level.

Art Unit: 2613

Because Kerfoot discloses all the features of the claimed invention, it is not needed for Examiner to take any Official Notice.

In light of the above discussion, the Office Action clearly establishes a *prima facie* case and the rejections of claims 1 and 7 still stand. For the same reasons, the rejections of the remaining claims still stand.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Quan-Zhen Wang whose telephone number is (571) 272-3114. The examiner can normally be reached on 9:00 AM - 5:00 PM, Monday - Friday.

Art Unit: 2613

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

qzw
1/20/2007


HANH PHAN
PRIMARY EXAMINER